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New Claim 1

1. Bioreactor for cultivating organic material, in particular cells, by means of a nutrient medium, which can be put into a flow, comprising
  - a housing,
  - a receiving device arranged therein, which has a receiving space (13) for the organic material that can be flowed through by the nutrient medium,
  - at least two partition wall elements (11), which enclose the receiving space (13) and each have a membrane (11a), which is on the one hand permeable to the nutrient medium and on the other hand substantially impermeable to the organic material, and
  - a carrier element (12) arranged in the receiving space (13), which is permeable to the nutrient medium and is designed as a fabric for an adhesion of the organic material,

characterized in that

- the housing is constructed as a flat cell having a annular carrier plates (24),
- the partition wall elements (11) have a supporting fabric (11b), to which the membrane (11a) is applied and
- both the supporting fabric (11b) with the applied membrane (11a) and the fabric of the carrier element (12) are each mounted in an annular carrier plate (24).

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New Claims 2 to 16

2. Bioreactor according to claim 1,  
characterized in that  
the carrier element (12) has a three-dimensional structure, in particular it is designed as three-dimensional fabric.
3. Bioreactor according to claim 1 or 2,  
characterized in that  
the carrier element (12) includes a textile carrier material.
4. Bioreactor according to claim 3,  
characterized in that  
- the textile carrier material is surface-treated and  
- a bio-compatible surface is formed with a structure adapted for an adhesion of the organic material.
5. Bioreactor according to any one of claims 1 to 4,  
characterized in that  
the receiving device of the flat cell (9) is designed circularly.
6. Bioreactor according to any one of claims 1 to 5,  
characterized in that  
a number of flat cells (9) are arranged as modules in one flow direction in a parallel and/or serial fashion.

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7. Bioreactor according to any one of claims 1 to 6, characterized in that a control device is provided, by means of which a flow generating device, a temperature adjusting unit, a gassing unit, a degassing unit and/or further supply units can be controlled and/or regulated.
8. Bioreactor according to claim 7, characterized in that
  - a sensor device is arranged in one flow direction after the receiving space (13), by means of which physical and chemical values of state of the nutrient medium can be determined and
  - the sensor device is connected to the control device.
9. Bioreactor according to any one of claims 1 to 8, the directio... characterized in that
  - a closed, in particular dismountable housing is provided, in which the receiving device is arranged, and
  - at least one feed and one discharge are provided for a the nutrient medium as well as an access for introducing and removing the organic material.
10. Method for cultivating organic material, wherein
  - a nutrient medium is at least temporarily put into a flow,
  - the organic material is introduced into a receiving device of a bioreactor (11) and
  - the nutrient medium is passed through the receiving device of the bioreactor (11) for a convective supply of the organic material,characterized in that

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- a bioreactor (11) according to any one of claims 1 to 9 is used.
- 11. Method according to claim 10,  
characterized in that prior to an inoculation or introduction of the organic material into the receiving device this is sterilized.
- 12. Method according to claim 10 or 11,  
characterized in that prior to a removal of the cultivated organic material from the receiving device a medium, in particular an enzyme, is introduced for detaching adhered organic material.
- 13. Method according to any one of claims 10 to 12,  
characterized in that the direction of flow of the nutrient medium that is passed through the receiving device is changed during the cultivation of the organic material.
- 14. Method according to any one of claims 10 to 13,  
characterized in that a chemical and/or physical state of the nutrient medium, in particular a material composition, a stoichiometrical composition, temperature, pressure or rate of flow, are specifically changed in the course of the cultivation.
- 15. Method according to any one of claims 10 to 13,  
characterized in that
  - at least after passing the nutrient medium through the receiving device chemical and/or physical values of state of the nutrient medium are measured,
  - the measured values of state are recorded and analysed

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- the measured values of state are employed for controlling and/or regulating the course of the cultivation of the organic material.

16. Method according to any one of claims 10 to 15  
characterized in that

- the nutrient medium is passed through a number of receiving devices, which are arranged to each other in a parallel and/or serial fashion.